Philosophical Magazine Letters

Physics of Condensed Matter

PHILOSOPHICAL MAGAZINE LETTERS

Joint Editors

Professor E. A. Davis	Department of Physics and Astronomy, University of Leicester, UK
Dr S. R. Elliott	Department of Physical Chemistry, University of Cambridge, UK

North American Editor

Dr J. L. Smith	Los Alamos National Laboratory, USA

Associate Editors

Professor D. J. Bacon	Department of Materials Science and Engineering, University of Liverpool, UK
Dr M. J. Goringe *and* Dr. M. L. Jenkins	Department of Materials, University of Oxford, UK
Dr A. B. Lidiard	Department of Theoretical Chemistry, University of Oxford, UK
Dr W. M. Stobbs	Department of Materials Science and Metallurgy, University of Cambridge, UK
Dr D. D. Vvedensky	Blackett Laboratory, Imperial College, UK

Regional Editors

Dr C. Ayache	Laboratoire de Cryophysique, Centre d'Études Nucléaires de Grenoble, France
Professor R. M. Bradley	Department of Physics, Colorado State University, USA
Dr D. J. H. Cockayne	Electron Microscope Unit, University of Sydney, Australia
Dr M. Duesbery	Naval Research Laboratory, Washington, USA
Professor J. D. Embury	Department of Materials Science and Engineering, McMaster University, Canada
Professor Dr E. O. Göbel	Fachbereich Physik, Philipps-Universität Marburg, Germany
Professor F. Hensel	Fach Physikalische Chemie, Philipps-Universität Marburg, Germany
Dr M. Kléman	Laboratoire de Physique des Solides, Université de Paris-Sud, France
Professor K. Morigaki	Institute of Solid State Physics, University of Tokyo, Japan
Professor C. N. R. Rao	Solid State and Structural Chemistry Unit, Bangalore, India
Dr Cheng Ruguang	Shanghai Institute of Ceramics, P.R. China
Professor Dr W. Schilling	Institut für Festkörperforschung der Kernforschungsanläge Jülich, Germany
Dr C. Schlenker	Laboratoire d'Études des Propriétés Électroniques des Solides, CNRS-Grenoble, France
Professor A. Seeger	Institut für Physik, Max-Planck-Institut für Metallforschung, Stuttgart, Germany
Dr V. Smid	Institute of Physics, Czechoslovak Academy of Science, Praha, Czechoslovakia
Dr R. A. Street	Palo Alto Research Center, Xerox Corporation, USA
Dr M. Tosi	ICTP, Trieste, Italy
Professor U. Valdrè	Dipartimento di Fisica, Università di Bologna, Italy
Professor V. Vitek	Department of Materials Science and Engineering, University of Pennsylvania, USA

Consultant Editors

Professor Sir Nevill Mott	Cavendish Laboratory, University of Cambridge, UK
Professor B. R. Coles	Department of Physics, Imperial College, UK

Subscription Information

Philosophical Magazine Letters (*ISSN 0950-0839*) is published monthly by Taylor & Francis Ltd, 4 John Street, London WC1N 2ET, UK.

Annual Subscription 1992 £695 US$1190.

Second class postage paid at Jamaica, New York 11431. USA Postmasters: Send address changes to *Philosophical Magazine*, Publications Expediting Inc., 200 Meacham Avenue, Elmont, New York 11003. Air freight and mailing in the USA by Publications Expediting Inc., 200 Meacham Avenue, Elmont, New York 11003.

Printed in UK by Burgess Science Press, Rankine Road, Basingstoke, Hampshire RG24 0PR, UK. The paper used in this publication has a specified pH value on final manufacture of not less than 7·5 and is therefore 'acid free'.

Subscription prices includes parts A and B and Letters, none of which is available separately. Dollar rates apply to subscribers in all countries except the UK and the Republic of Ireland where the pound sterling price applies. All subscriptions are payable in advance and all rates include postage. Journals are sent by air to the USA, Canada, Mexico, India, Japan and Australasia. Subscriptions are entered on an annual basis, i.e. January to December. Payment may be made by sterling cheque, dollar cheque, international money order, National Giro, or credit card (Amex, Visa, Mastercard/Access).

Orders originating in the following territories should be sent direct to the local distributor. **Australia:** R. Hill & Son Ltd, 119 Gardenvale Road, Gardenvale, Victoria 3185. **New Zealand:** R. Hill & Son Ltd, Private Bag, Newmarket, Auckland 1. **India:** Universal Subscription Agency Pvt. Ltd, 101–102 Community Centre, Malviya Nagar Extn, Post Bag No. 8, Saket, New Delhi 110017. **Japan:** Kinokuniya Company Ltd, Journal Department, PO Box 55, Chitose, Tokyo 156. **USA, Canada and Mexico:** Taylor & Francis Inc., 1990 Frost Road, Suite 101, Bristol, Pennsylvania 19007. **UK and all other territories:** Taylor & Francis Ltd, Rankine Road, Basingstoke, Hampshire RG24 0PR.

PHILOSOPHICAL MAGAZINE LETTERS

CONTENTS OF VOL. 65

NUMBER 1—JANUARY

PAGE

Diffraction contrast of quasicrystalline dislocations in the transmission electron microscope
By M. WOLLGARTEN, Z. ZHANG and K. URBAN 1

Transient modulated chemical order during the quasicrystal-to-crystal phase transition of Al–Fe–Cu
By N. MENGUY, M. AUDIER and P. GUYOT 7

Kinetics of tweed and twin formation during an ordering transition in a substitutional solid solution
By LONG-QING CHEN, YUNZHI WANG and A. G. KHACHATURYAN 15

An icosahedral quasicrystal and its cubic approximant in the Al–Pd–Mn system
By A. WASEDA, H. MORIOKA, K. KIMURA and H. INO 25

Experimental observation and computer simulation of high-order Laue zone line patterns of Al–Co–Ni decagonal quasicrystals
By YANFA YAN, RENHUI WANG, JIANIAN GUI, MINGXING DAI and LUNXIONG HE 33

Electron-beam-enhanced flow and instability in amorphous silica fibres and tips
By P. M. AJAYAN and S. IIJIMA 43

Quasiperiodic lattice and crystallography in four-dimensional space
By WANG SHAOQING and YE HENGQIANG 49

Decagonal and decagonal approximant formation as a function of composition in ternary Al–Co–Cu alloys
By T. L. DAULTON, K. F. KELTON, S. SONG and E. R. RYBA 55

Polarized photodoping of As_2S_3 films by silver
By A. V. KOLOBOV, V. M. LYUBIN and V. K. TIKHOMIROV 67

NUMBER 2—FEBRUARY

Study of quenched-in vacancies in the intermetallic compound NiSb by differential scanning calorimetry
By A. JENNANE, J. BERNARDINI, G. HATEM and G. MOYA 71

Effect of titanium impurities on helium bubble growth in nickel
By G. AMARENDRA, B. VISWANATHAN, R. RAJARAMAN, S. SRINIVASAN and K. P. GOPINATHAN 77

Structural repeat units and repeat schemes for the Al–Cu–Co decagonal phase and its crystalline approximants
By SHIHONG SONG and E. R. RYBA 85

PAGE

Systematic change in surface structures on Si(111) clean surfaces with temperature
By A. ISHIZAKA and T. DOI 95

Hot electrons and lattice relaxation following ion implantation
By A. M. MAZZONE 101

The nature of extrinsic photoconductivity in diamond thin films
By K. OKUMURA, J. MORT and M. A. MACHONKIN 105

Decorations of magnetic flux pinning positions on the (001) face of a single crystal of high-T_c superconductor $YBa_2(Cu, Au)_3O_{7-\delta}$
By R. BLUM, M. AUDIER, Y. BRÉCHET, F. WEISS, J. P. SÉNATEUR and A. ROUAULT 113

NUMBER 3—MARCH

High-resolution electron microscopy of dislocation dipoles in plastically deformed InP
By M. LUYSBERG, D. GERTHSEN and K. URBAN 121

The role of antiphase boundary energy in influencing intergranular failure in iron aluminides
By U. PRAKASH, R. A. BUCKLEY, H. JONES and G. W. GREENWOOD 129

Grain-boundary diffusion: analysis of the C kinetic regime
By P. GAS, D. L. BEKE and J. BERNARDINI 133

The scaling theory of normal grain growth: beyond the mean-field approximation
By P. A. MULHERAN 141

Centimetre-size single grain of the perfect Al–Pd–Mn icosahedral phase
By M. DE BOISSIEU, M., DURAND-CHARRE, P. BASTIE, A. CARABELLI, M. BOUDARD, M. BESSIERE, S. LEFEBVRE, C. JANOT and M. AUDIER 147

Molecular diffusion of oxygen and water in amorphous silica: role of basal dislocations
By M. I. HEGGIE 155

Large ⟨110⟩-segmented helical dislocations in natural diamond
By J. C. WALMSLEY and A. R. LANG 159

A new microstructure in chromium–carbon coatings
By J. L. DEREP 167

NUMBER 4—APRIL

Dramatic reduction in the longitudinal-optical phonon emission rate in polar-semiconductor quantum wires
By M. A. STROSCIO, K. W. KIM, G. J. IAFRATE, M. DUTTA and H. L. GRUBIN 173

PAGE

Instability in hydrogenated amorphous silicon/amorphous silicon dioxide thin-film transistors: evidence for a predominant effect of charge trapping into the gate insulator
By L. MARIUCCI, G. FORTUNATO, C. PUGLIA, A. PECORA and S. PRIORI 177

Electron structure and atomic magnetic moments of Fe–Cr alloys based on X-ray photoelectron spectroscopy and calculations in the coherent-potential approximation
By I. G. BATIREV, A. I. ZAKHAROV, J. A. LEIRO and A. G. NARMONEV 183

Dislocations observed by transmission electron microscopy in the quasicrystalline phase T2 of Al–Li–Cu after deformation
By DAPENG YU, W. STAIGER and M. KLEMAN 189

Octahedral cross-slip in $Ni_3(Al, Ti)$ deformed at $-196°C$
By A. KORNER 195

A transmission electron microscopy study of dislocations in $Al_{70}Ni_{10}Co_{20}$ and $Al_{75}Ni_{10}Fe_{15}$ decagonal quasicrystals
By Z. ZHANG and Y. ZHUANG 203

Direct observation of misfit dislocations at the interface between a decagonal quasicrystal and its epitaxial crystalline layers
By Z. ZHANG and W. GENG 211

NUMBER 5—MAY

Bipolaron theory approach to the microwave surface resistance of high-temperature superconductors
By O. G. VENDIK and A. YU. POPOV 219

The double-sign anomaly of the Hall coefficient in amorphous silicon: verification by computer simulations
By J. M. HOLENDER and G. J. MORGAN 225

Studies on the deformation behaviour of interfaces in $(\gamma + \alpha_2)$ titanium aluminide by high-resolution transmission electron microscopy
By S. R. SINGH and J. M. HOWE 233

Habit and structure of Cd(S, Se) quantum dots in silicate glasses: high-resolution transmission electron microscopy
By M. ALLAIS and M. GANDAIS 243

High-pressure studies on the critical composition in Ge–As–Te glasses
By A. SRINIVASAN, K. RAMESH, K. N. MADHUSOODANAN and E. S. R. GOPAL 249

Continuous ordering below the tricritical point: a critical test for the kinetic pathway in Fe–12 at.% Si alloy
By K. RAVIPRASAD and K. CHATTOPADHYAY 255

PAGE

Modified Einstein model applied to a KBr crystal to study the thermodynamic properties
By TAI-HYUNG KWON 261

Magnetoacoustic oscillations of ellipticity in indium
By V. V. GUDKOV and A. V. TKACH 267

Atomic structure of stacking faults in a $D0_{19}$ intermetallic compound
By L. GUETAZ and J. M. PENISSON 273

Dynamic observation of dislocation sources at grain boundaries in ice
By F. LIU, I. BAKER, G. YAO and M. DUDLEY 279

NUMBER 6—JUNE

Imaging of molecules, lattice and lattice defects in C_{60}–C_{70} fullerites by high-resolution electron microscopy
By F. BANHART, M. FORSTER, W. KRÄTSCHMER and H.-E. SCHAEFER 283

***Ab initio* calculations of the structure and dynamics of C_{60} and C_{60}^{3-}**
By R. JONES, C. D. LATHAM, M. I. HEGGIE, V. J. B. TORRES, S. ÖBERG and S. K. ESTREICHER 291

Preliminary high-resolution electron microscopy study of $(11\bar{2}0)$ oriented Al_2O_3–Fe interfaces
By T. EPICIER, C. ESNOUF, M. A. SMITH and D. POPE 299

High-resolution electron microscopy image simulations on the R-Al_5CuLi_3 icosahedral approximant phase
By N. TAMURA, P. GUYOT and J. L. VERGER-GAUGRY 311

Prediction of the configuration of a 'Bardeen–Herring' dislocation climb source under dynamic conditions
By B. BURTON and D. T. KNIGHT 321

Rigid-body displacements at incoherent {112} $\Sigma = 3$ boundaries in Ni_3Al
By C. T. FORWOOD and M. A. GIBSON 331

Long-ranged stress field produced by a planar assembly of edge dislocations: the effect of disorder
By E. BOUCHAUD and J.-P. BOUCHAUD 339

Subject index 345

Index of authors (with titles) 347